UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,775	10/24/2003	Kenneth R. Goodman	22.1521	8941

35204 7590 06/02/2005

SCHLUMBERGER RESERVOIR COMPLETIONS
14910 AIRLINE ROAD
ROSHARON, TX 77583

EXAMINER	
TAYLOR, VICTOR J	
ART UNIT	**PAPER NUMBER**
2863	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/692,775	GOODMAN, KENNETH R.	
	Examiner	Art Unit	
	Victor J. Taylor	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *First Office Action*.

DETAILED ACTION

Drawings

1. The drawings were received on 18 December 2003. These drawings are approved.

Specification

2. The disclosure is objected to because of the following informalities:

The use of the term of "a priori" signals" used to define the transmitted communication signals comprising mud pulse transmitted signals with signals using variable pulse width and the variable pulse reparation rates as found in paragraph 0005 on page 1 of the specification is vague and unclear as to just what actually comprise the "a priori" communication signals. Appropriate correction is required

3. Claims 1-17 are objected to because of the following informalities:

The applicant claims limitation terms for "a priori unknown" in the claims that find indefinite support in the specification. It is not clear to the examiner just what comprises the "a priori unknown or undefined shape". The Standard Digital Signal Processing text in the second edition by S. W. Smith and in chapter 24 on linear image processing techniques discloses the convolution and defines the common transmitted signal using the variable pulse width and the adjustable repletion rates and is well know in the electronic design engineers art as found in the public text. Appropriate correction is required.

Prior Art

4. The prior art made of record and not relied upon is considered pertinent to applicant:

I. Gruenhagen in US 5,963,138 in class 340/679 is cited for the drilling tool 4 and apparatus of adjusting the downlink signal communication using mud-pulse telemetry in the borehole see the abstract, with the apparatus in figure 1 and controlled using the electronic controller 25 and discloses the pulsed fluid flow with the pulse amplitude and pulse duration controlled using the series of signals including the "wake-up pulse", i.e. the "a priori" pulse signals 72 in figure 1. He further discloses the signal source in the mud pulse telemetry and electronic computer on the borehole tool with the "a priori" wake up signal for the controller in figure 3 and in lines 1-65 of column 4.

II. Estes in US 4,051,907 in class 175/4.55 is cited for the borehole selective firing system using the control unit 10 in figure 1 using the switches 28 to control the firing sequence with the selected "a priori" signals with selected duty cycles and time period frequencies in lines 10-25 of column 3.

III. Hahn et al., in US 6,626,253 in class 175/048 is cited for the computer control of the oscillating shear valve for mud pulse telemetry in the borehole 16 using the borehole tool 10 in figure 1 and discloses the surface generated command signals in line 40 of column 3.

IV. Harmon et al., in US 6,584,406 in class 702/006 is cited for the downhole process control method utilizing the seismic communication 100 using times signals 170 utilizing the selected communication timed protocol, i. e. the "a

priori communication signal" in figure 1 and disclosed in the abstract and in lines 20-65 of column 4.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Harmon et al., in US Patent 6,885,918.

With regard to claim 1, Harmon discloses the controller system 350 in the subterranean well 140 in figure 3 and further discloses all the limitations for claim 1 in figure 1. He further discloses the controller 350 located in the well 140 in figure 3. He further discloses the signal source 100 putting a command signal 170 into the well 180 in figure 1. He further discloses the "a priori" signal 170 transmitted with variable amplitude and pulse width starting at T1 in figure 1 and discloses the "a priori" coded signals in lines 60-65 of column 5.

Re claim 2, which stands rejected on the rejected base claim 1, Harmon further teaches the apparatus on the borehole tool comprises a computation device with a memory unit in the process controller 350 and a computation device process controller 350 and a signal processor 340 and a sensor device 330 in figure 3 and further discloses the ADC device 450 with the Pre-Amp buffer device 440 connected to the sensors 415 in the borehole on the borehole tool

420 in figure 4. He further discloses the CPU 520 and storage device 530 in figure 5.

Re claims 3-4, which stands rejected on the rejected base claim 1, Harmon further teaches the steps for the pressure wave with a pressure sequence 160 in figure 1. He further discloses the wave 170 providing the acceleration 170 in figure 1.

Re claim 5, which stands rejected on the rejected base claim 1, Harmon further teaches the steps for the signal source 110 in figure 1 with the transmitted information to a location to the tool in the borehole in lines 60-65 in column 3. He teaches signal data processes and the information transmitted is a coded command signal interpretable by reference to a stored project menu in line 10 of column 4 and includes the activation of the perforating gun in the borehole and thereby affecting the flow rate of fluid in the borehole. He does not teach mud pulse telemetry as previously cited in the critical art above and well knows as a communication method in the art.

Re claim 6, which stands rejected on the rejected base claim 1, Harmon further teaches the steps for the signal source 110 in figure 1 provides variations in applied force 160 in figure 1 as indicated by the various signal responses in figure 14-A.

Re claim 7, which stands rejected on the rejected base claim 1, Harmon further teaches the steps for the signal source 110 in figure 1 provides variations in stress or strain in the wave path 160 in figure 1 and found in lines 10-45 of

column 5 indicative of common characteristic of transmitted signals through lithographic structures.

Re claims 8 and 9, which stands rejected on the rejected base claim 1, Harmon further teaches the steps for at least one computer parameter by synchronize the downhole clocks 930 in the computation processes in figure 9. He further discloses the buffer sensor data 440 in figure 4

With regard to claim 10, the arguments applied to independent claim 1 are applied to claim 10 for their common features.

Harmon further discloses the controller system 350 in the subterranean well 140 in figure 3 and further discloses all the limitations for claim 10 in figure 1.

He further discloses the memory unit in the CPU 520 with the storage device 530 in figure 5.

He further discloses the microprocessor CPU 520 unit in figure 5.

He further discloses the buffer pre-amp 440 in figure 4.

He further discloses the ADC unit 450 in the borehole tool 330 in figure 4.

He further discloses the downhole tool interface signal processor 340 in figure 5.

He further discloses the signal source 100 putting a command signal 170 into the well 180 in figure 1. He further discloses the "a priori" coded signal 170 transmitted with variable amplitude and pulse width starting at T1 in figure 1 and discloses the "a priori" coded signals in lines 60-65 of column 5.

Harmon further teaches the apparatus on the borehole tool comprises a computation device with a memory unit in the process controller 350 and a

computation device process controller 350 and a signal processor 340 and a sensor device 330 in figure 3 and further discloses the ADC device 450 with the Pre-Amp buffer device 440 connected to the sensors 415 in the borehole on the borehole tool 420 in figure 4.

Harmon further teaches the steps of execution of the computer parameter 520 by synchronize the downhole clocks 930 in the computation processes in figure 9.

Re claim 11, which stands rejected on the rejected base claim 10, Harmon further, teaches the steps for communications signals 160 sampled by the ADC 450 in figure 4.

Re claim 12, which stands rejected on the rejected base claim 10, Harmon further, teaches the steps for performing the repeating command signal using the quiescent time 1100 with the pause 1120 and command shots 1135 in figure 11.

Re claims 13-15, which stands rejected on the rejected base claim 10, Harmon further teaches the steps for computer processes computations with recognition of signals representing command signals 1135 in figure 11 and teaches computed parameter in Target Time 1120, and teaches the computed parameter in the steps for generating the command shot parameter 1135, and teaches correlation coefficient 1230 in figure 12-A.

With regard to claim 16, the arguments applied to independent claims 1 and claim 10 are applied to claim 16 for their common features.

Harmon further discloses taking data samples using the controller system 350 in the subterranean well 140 in figure 3.

He further discloses storing the data samples in the data buffer in the CPU 520 in figure 5 and He further discloses the buffer sensor data 440 in figure 4.

He further discloses computing data parameters using the data samples in the buffer using the computation system 340 in figure 5.

He further discloses steps for comparing computed parameters in the cross-correlated data step 1230 in figure 12-A and in Addition Harmon further teaches the steps of deciding the execution of the computer parameter 520 by synchronize the downhole clocks 930 in the computation processes figure 9.

Re claim 17, which stands rejected on the rejected base claim 16, Harmon further teaches the steps for cross-correlation and teaches differences between model times and corrected times using standard deviation or other measures of difference values in lines 5-30 of column 21 that encamp the equation boundaries for computing parameters for a first and second mean and a first and second deviation and a correlation coefficient in line 5 of column 21.

With regard to claim 18, the arguments applied to the independent claims 1 and 10 above and to claim 16 are applied to claim 18 for their common features. Harmon further discloses all the limitations for claim 18 in figure 1.

He further discloses placing a controller 330 at a desired location in the well 180 using the borehole tool 140 in figure 1.

He further discloses sending a repeating signal from a signal source 100 in a desired location in figure 1.

He further discloses recording samples 160 while the signal 100 is being sent in figure 1 and using the data samples in the buffer 520 and creating upper

send profile and lower receive profile in the buffer for cross-correlation of data in the computation processes 1320 in figure 15.

He further discloses comparing computed parameters to predefined tolerances using the computation computer process for cross correlate the data 1230 in figure 12-A.

He further discloses initiating actuation of computation processes for deciding a command signal based on the comparison results for elements gathered 1150 in figure 11.

Re claims 19, which stands rejected on the rejected base claim 18, Harmon further teaches steps for cross correlate the data 1230 in figure 12-A.

Re claim 20, which stands rejected on the rejected base claim 18, Harmon further teaches the steps for cross-correlation and teaches differences between model times and corrected times using standard deviation or other measures of difference values in lines 5-30 of column 21 that encamp the equation boundaries for computing parameters for a first and second mean and a first and second deviation and a correlation coefficient in line 5 of column 21.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 571-272-2281. The examiner can normally be reached on 8:00 to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2863. The

fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

V. J. Taylor
24 May 2005.

John Barlow
Supervisory Patent Examiner
Technology Center 2800